

### **REMARKS**

Claims 1-2 and 4 are currently pending in the application. Claims 1-2 and 4 are herein amended. No new matter has been presented.

#### **Rejection under 35 USC §103(a)**

**Claims 1-4 were rejected under 35 U.S.C. 103(a) as being obvious over Baiker et al. (U.S. Patent No. 4,916,109 (Baiker)), further in view of Aoki et al., “Crystallization of amorphous Zr-Ni alloys in the presence of H<sub>2</sub> GO, O<sub>2</sub>, N<sub>2</sub> and argon gases”, Journal of Materials Science, Vol. 21 pages 793-798, 1986 (Aoki).**

Claim 1 has been amended to limit “Zr<sub>100-a-b</sub> Pd<sub>a</sub> M<sub>b</sub>” to “Zr<sub>100-a-b</sub> Pd<sub>a</sub> Ni<sub>b</sub>”.

It should be noted that Claim 1 is directed to a “hydrogen storage and/or transportation **container**” but not a “hydrogen storage alloy material.”

Baiker et al. discloses an activated PdZr oxide catalyst as an amorphous or crystalline alloy, a PdZrO<sub>2</sub> precipitation catalyst and processes for total oxidation of CO, aliphatic and aromatic hydrocarbons and aliphatic alcohols with the help of the catalysts. Thus, Baiker et al. discloses an activated **catalyst** but **not hydrogen storage alloy material**. Nothing in Baker indicates that the catalyst is suitable for hydrogen storage.

The hydrogen storage and/or transportation container requires properties of good hydrogen desorption. The comparison between Inventive Example 1 and Comparative Example 1 in the present specification shows that the hydrogen storage alloy material used in the present invention is remarkably superior to the Zr<sub>65</sub>Pd<sub>35</sub> disclosed in Baker et al in the hydrogen desorption amount. If Pd and Ni were equivalents, such a difference would not appear.

The Examiner alleged as follows:

Aoki teaches that zinc[zirconium] based alloy such as ZnNi[ZrNi] and ZnPd [ZrPd] amorphous alloys absorb considerably quantity of hydrogen and also acts as catalyst for hydrogenation of carbon monoxide(introduction). Since ZnNi[ZrNi] and ZnPd[ZrPd] are functionally equivalent hydrogen absorbing material and catalyst material, one of ordinary skill in the art would have found it obvious to have partially substituted Pd with Ni(i.e. use a combination of Pd and Ni) in the ZnPd[ZrPd] metal alloy of Baiker and achieve the same expected success of obtaining a hydrogen absorbing material and/or a catalyst material.

(Office Action, page 3, lines 9-15). Thus, Examiner concludes that Zr-Ni and Zr-Pd are functionally equivalent hydrogen absorbing material based on the only description “it has been reported that zirconium based Zr-Ni and Zr-Pd amorphous alloys absorb considerably quantity of hydrogen” in “Introduction” in Aoki. However, Ni and Pd are elements of different groups and it is known that these elements have different chemical and physical properties. Therefore, there is no reason for a person of ordinary skill in the art to replace Ni in Zr-Ni with Pd based on the simple description in Aoki.

Also, even taking one example of Zr-Ni alloys or Zr-Pd alloys, it does not represent all the alloys in the system. Aoki describes: “a-Zr<sub>37</sub>Ni<sub>63</sub> can absorb hydrogen,-- On the contrary, the a-Zr<sub>67</sub>Ni<sub>33</sub> alloy hardly reacts gases below its crystallization temperature.”(Abstract). Applicants submit herewith some other examples. Spit et al. report on the hydrogen sorption characteristics of amorphous Ni<sub>54</sub>Zr<sub>36</sub>. Another Aoki et al. (Hydrogen Absorption and Desorption Properties of the Amorphous Zr-Ni Alloys in Aoki) report that “The desorbed amount of hydrogen decreased with increasing Zr content in the alloy.”(Conclusion, Fig. 7). Another Aoki et al. (Thermodynamics of Hydrogen Absorption in Amorphous Zr-Ni Alloys in Aoki) report that “the capacity for dissolving hydrogen increases with Zr concentration of the alloys.” (Results and Discussion, Fig. 2). Thus, the properties of an alloy vary according to the composition of elements. Nothing in Aoki indicates Ni

and Pd are interchangeable. Nor does Aoki teaches or suggest that the results described in the present specification are obtained.

Therefore, there is no reason for a person of ordinary skill in the art to combine the teachings of Baiker et al. and Aoki. Moreover, even the teachings Baiker et al. and Aoki are combined, the hydrogen storage and/or transportation container of the present invention would not be obtained.

For at least these reasons, Claim 1 patentably distinguish over Baiker et al. and Aoki. Claims 2 and 4, depending from claim 1, also patentably distinguish over Baiker et al. and Aoki for at least the same reasons.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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